CLAIMS

1) A computer implemented system for enabling data analysis comprising:

A computer linked to one or more data sources adapted to provide to the computer a plurality of knowledge elements; and

5 An analytical engine, executed by the computer, that relies on one or more of the plurality of knowledge elements to enable intelligent modeling, wherein the analytical engine includes a data management system for accessing and processing the knowledge elements.

2) The computer implemented system claimed in claim 1, wherein the analytical
10 engine defines one or more knowledge entities, each of which is comprised of at least one knowledge element.

3) The computer implemented system as claimed in claim 2, wherein the analytical engine is adapted to update dynamically the knowledge elements with a plurality of records and a plurality of variables.

15 4) The computer implemented system claimed in claim 2, wherein the knowledge entity consists of a data matrix having a row and a column for each variable, and wherein the knowledge entity accumulates sets of combinations of knowledge elements for each variable in the intersection of the corresponding row and column.

20 5) The computer implemented system as claimed in claim 4, wherein the analytical engine enables variables and/or records to be dynamically added to, and subtracted from, the knowledge entity.

6) The computer implemented system claimed in claim 5, wherein the analytical engine enables the deletion of a variable by deletion of the corresponding row
25 and/or column, and wherein the knowledge entity remains operative after such deletion.

7) The computer implemented system claimed in claim 5, wherein the analytical engine enables the addition of a variable by addition of a corresponding row

and/or column to the knowledge entity, and wherein the knowledge entity remains operative after such addition.

8) The computer implemented system claimed in claim 5, wherein an update of the knowledge entity by the analytical engine does not require substantial re-training or re-calibration of the knowledge elements.

9) The computer implemented system claimed in claim 2, wherein the analytical engine enables application to the knowledge entity of one or more of: incremental learning operations, parallel processing operations, scenario testing operations, dimension reduction operations, dynamic query operations or distributed processing operations.

10) A computer implemented system for enabling data analysis comprising:

a) A computer linked to one or more data sources adapted to provide to the computer a plurality of knowledge elements; and

b) An analytical engine, executed by the computer that relies on one or more of the plurality of knowledge elements to enable intelligent modeling, wherein the analytical engine is linked to a data management system for accessing and processing the knowledge elements.

11) A method of data analysis comprising:

a) Providing an analytical engine, executed by a computer, that relies on one or more of a plurality of knowledge elements to enable intelligent modeling, wherein the analytical engine includes a data management system for accessing and processing the knowledge elements; and

b) Applying the intelligent modeling to the knowledge elements so as to engage in data analysis.

12) A method of enabling parallel processing, comprising the steps of :

a) Providing an analytical engine, executed by a computer, that relies on one or more of a plurality of knowledge elements to enable intelligent modeling,

wherein the analytical engine includes a data management system for accessing and processing the knowledge elements;

b) Subdividing one or more databases into a plurality of parts and calculating a knowledge entity for each part using the same or a number of other computers to accomplish the calculations in parallel

c) Combining all or some of the knowledge entities to form one or more combined knowledge entities; and

d) Applying the intelligent modeling to the knowledge elements of the combined knowledge entities so as to engage in data analysis.

13) A method of enabling scenario testing, wherein a scenario consists of a test of a hypothesis, comprising the steps of:

a) Providing an analytical engine, executed by a computer, that relies on one or more of a plurality of knowledge elements to enable intelligent modeling, wherein the analytical engine includes a data management system for accessing and processing the knowledge elements, whereby the analytical engine is responsive to introduction of a hypothesis to create dynamically one or more new intelligent models; and

b) Applying the one or more new intelligent models to see future possibilities, obtain new insights into variable dependencies as well as to assess the ability of the intelligent models to explain data and predict outcomes.

14) A method of enabling dimension reduction, comprising the steps of:

a) Providing an analytical engine, executed by a computer, that relies on one or more of a plurality of knowledge elements to enable intelligent modeling, wherein the analytical engine includes a data management system for accessing and processing the knowledge elements; and

b) Reducing the number of variables in the knowledge entity by the analytical engine defining a new variable based on the combination of any two variables, and applying the new variable to the knowledge entity.

15) The method as claimed in claim 14, further comprising the step of successively applying a series of new variables so as to accomplish further dimension reduction.

16) A method of enabling dynamic queries:

a) Providing an analytical engine, executed by a computer, that relies on one or more of a plurality of knowledge elements to enable intelligent modeling, wherein the analytical engine includes a data management system for accessing and processing the knowledge elements;

b) Establishing a series of questions that are directed to arriving at one or more particular outcomes; and

c) Applying the analytical engine so as to select one or more sequences of the series of questions based on answers given to the questions, so as to rapidly converge on the one or more particular outcomes.

17) A method of enabling distributed processing:

a) Providing an analytical engine, executed by a computer, that relies on one or more of a plurality of knowledge elements to enable intelligent modeling, wherein the analytical engine includes a data management system for accessing and processing the knowledge elements, whereby the analytical engine enables the combination of a plurality of knowledge entities into a single knowledge entity; and

b) Applying the intelligent modeling to the single knowledge entity.

18) The computer-implemented system claimed in claim 1, wherein the analytical engine:

a) Enables one or more records to be added or removed dynamically to or from the knowledge entity;

b) Enables one or more variables to be added or removed dynamically to or from the knowledge entity;

c) Enables use in the knowledge entity of one or more qualitative and/or quantitative variables; and

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d) Supports a plurality of different data analysis methods.

19) The computer-implemented system claimed in claim 18, wherein the knowledge entity is portable to one or more remote computers.

20) The computer-implemented system claimed in claim 1, wherein the intelligent modeling applied to relevant knowledge elements enables one or more of:

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a) credit scoring;

b) predicting portfolio value from market conditions and other relevant data;

c) credit card fraud detection based on credit card usage data and other relevant data;

d) process control based on data inputs from one or more process monitoring

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devices and other relevant data;

e) consumer response analysis based on consumer survey data, consumer purchasing behaviour data, demographics, and other relevant data;

f) health care diagnosis based on patient history data, patient diagnosis best practices data, and other relevant data;

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g) security analysis predicting the identity of a subject from biometric measurement data and other relevant data;

h) inventory control analysis based on customer behaviour data, economic conditions and other relevant data;

i) sales prediction analysis based on previous sales, economic conditions and

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other relevant data;

j) computer game processing whereby the game strategy is dictated by the previous moves of one or more other players and other relevant data;

k) robot control whereby the movements of a robot are controlled based on robot monitoring data and other relevant data; and

5 l) A customized travel analysis whereby the favorite destination of a customer is predicted based on previous behavior and other relevant data; and

21) A computer program product for use on a computer system for enabling data analysis and process control comprising:

a) a computer usable medium; and

10 b) computer readable program code recorded on the computer useable medium, including:

i) program code that defines an analytical engine that relies on one or more of the plurality of knowledge elements to enable intelligent modeling, wherein the analytical engine includes a data management system for

15 accessing and processing the knowledge elements.

22) The computer program product as claimed in claim 21, where the program code defining the analytical engine instructs the computer system to define one or more knowledge entities, each of which is comprised of at least one knowledge element.

23) The computer program product as claimed in claim 22, wherein the program code

20 defining the analytical engine instructs the computer system to update dynamically the knowledge elements with a plurality of records and a plurality of variables.

24) The computer program product as claimed in claim 22, wherein the program code defining the analytical engine instructs the computer system to establish the

25 knowledge entity so as to consist of a data matrix having a row and a column for each variable, and wherein the knowledge entity accumulates sets of combinations of knowledge elements for each variable in the intersection of the corresponding row and column.

25) The computer program product as claimed in claim 24, wherein the program code defining the analytical engine instructs the computer system to enable variables and/or records to be dynamically added to, and subtracted from, the knowledge entity.

26) The computer program product as claimed in claim 25, wherein the program code defining the analytical engine instructs the computer system to enable the deletion of a variable by deletion of the corresponding row and/or column, and wherein the knowledge entity remains operative after such deletion.

27) The computer program product claimed in claim 25, wherein the program code defining the analytical engine instructs the computer system to enable the addition of a variable by addition of a corresponding row and/or column to the knowledge entity, and wherein the knowledge entity remains operative after such addition.

28) The computer program product claimed in claim 25, wherein the program code defining the analytical engine instructs the computer system to enable the update of the knowledge entity without substantial re-training or re-calibration of the knowledge elements.

29) The computer program product claimed in claim 22, wherein the program code defining the analytical engine instructs the computer system to enable application to the knowledge entity of one or more of: incremental learning operations, parallel processing operations, scenario testing operations, dimension reduction operations, dynamic query operations or distributed processing operations.

30) A computer-implemented system as claimed in claim 1, wherein the analytical engine enables process control.

31) The computer-implemented system as claimed in claim 30, wherein the analytical engine enables fault diagnosis.

32) A method according to claim 11, wherein the method is implemented in a digital signal processor chip or any miniaturized processor medium.